Solvent Substitution That Works

SWRMC Uses Better Solvent to Control VOC Emissions from Its Parts Washers

The Southwest Regional Maintenance Center (SWRMC) in San Diego, CA is using an environmentally benign solvent and cleaning unit to control Volatile Organic Compound (VOC) emissions from its aqueous parts washers. And it's approved for use on the Naval Sea Systems Command's (NAVSEA) shore installation assets.

For over a decade, various production shops at SWRMC, formerly the Shore Intermediate Maintenance Activity (SIMA) San Diego, CA, has been using an organic solvent mixture for the cleaning machinery, gunnery, engine, electrical and fire control components/parts. This solvent has an average of 800 grams per liter of VOC, detectible amounts of heavy metals, dichlorobenzene, methylene chloride, and other Hazardous Air Pollutants (HAP), and is a known physical, and acute and chronic health hazard. It requires extensive application of personal protective equipment and good ventilation. The parts washers are leased on an annual basis, and not owned by the activity. In addition, an air emissions permit is required to operate the equipment. Both the permits and the leased parts washer are owned by the vendor, who also collects the generated waste streams, recycled at the vendor's facility and marketed for reuse.

In 1992 and 2003, NAVSEA's Fleet Assistance, Support Technology Transfer (FASTT) team with help from Designer and Planners Inc, conducted a Pollution Prevention Assessment at SIMA San Diego. Both teams recommended that solvent parts washers be replaced with aqueous parts washers for use on support and other equipment at NAVSEA's shore installations. These parts washers are used to degrease various equipment parts that are being refurbished, repaired, or replaced. They are also used during the overhaul of gas turbines, weapon systems, diesel engines, electric motors, hydraulic pumps, and air launch recovery systems.

By April 2004, NAVSEA's Pollution Prevention Working Group (P2WG) and SWRMC agreed to do a demonstration and test run of the first aqueous parts washer (Model

The new solvent contains no HAPs and is formulated with strong corrosion inhibitors to protect various metals during cleaning. It is also residue free and safe for use on common metals, rubber, and plastics.

Aqueous Parts Washer
(Model Renegade TMB 4000).

Aqueous Parts Washer
(Model Renegade TMB 7000 (Auto Wash).

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Renegade TMB 4000 and TMB 7000 (Auto Wash) at SWRMC's Rapid Secure Delivery/Air Launch Recovery (RAST) Shop using Hurrisafe 9065 solvent for parts cleaning. The resultant test exceeded the expectations of shop personnel who decided to buy a new unit to replace their existing one. Personnel from other production shops, including the Ordnance Repair and Engine shops, witnessed the demonstration and decided to order new units for their own shops as well.

The result of this test/demonstration was presented to the NAVSEA P2WG conference in September and October 2004. Based on this presentation, other Navy activities are considering the use of this product at their own facilities. In April 2005, nine more parts washers were ordered for different shops at SWRMC including the Gas Turbine Shop, the Fire Control Shop, the Gun Shop, the Electric Motor Rewind Shop, and the Outside Machine Shop.

Although the use of this product is not intended to supersede official directives, technical manuals or other directions by local authorities, this product has been approved for use at SWRMC by the civilian shop supervisor, military Shop Master, Production Department Technical Director, and Waterfront Operation Officer. Each individual shop is following the specific technical/equipment manual for the proper refurbishment, repair or overhaul of various component parts including diesel engines, hydraulic pumps, actuators, electric rotors, end bells, engine blocks, injectors and other engine and weapon system parts.

Hurrisafe, a proven and successful aqueous cleaner, replaces high VOC solvents and reduces the risk of exceeding the facility's air permit limit (48 tons of VOC emissions per year). Hurrisafe helps to facilitate environmental compliance, does not require a permit to operate, and reduces environmental impacts. Record keeping and the use of Personal Protective Equipment are minimized, and environmental, safety and health conditions are improved. Hurrisafe 9065 is a non-flammable, non-hazardous, biodegradable degreaser that is oil water separator compatible and formulated to be a relatively innocuous substance. The South Coast Air Quality Management District of Los Angeles, CA certified Hurrisafe 9065 as a clean air solvent (with a VOC content of 10 grams per liter at 1:3 dilutions in concentrate). Hurrisafe contains no HAPs ingredients and is formulated to contain defoamers and strong corrosion inhibitors to protect various metals during cleaning. Hurrisafe is residue free and safe for use on common metals, rubber, and plastics.

The Hurrisafe Renegade cleaning unit offers an advanced water based parts cleaning system. These units have been exclusively designed to be low maintenance with:

- Thermostats that are adjustable from 60 to 150 degrees Fahrenheit,
- A low water alarm system to prevent the motors from burning up if the cleaning solution becomes too low, and
- Adjustable nozzles and power gun spray systems to reduce the amount of time required to get into and around crevices and ports during cleaning.

The units have a triple inline filter system to extend the life of the cleaning solutions and trap solids, heavy greases and metals that are removed in the cleaning process. The units are portable, which provides for flexible operation and maximum utilization.

The final results show that the Hurrisafe aqueous clean and associated parts washer can be considered a solvent substitution that works for NAVSEA's shore side activities. ⚓

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